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Theme: ***“Combating Zoonoses: Strength in East-West Partnerships”***

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Survival and infectivity of chicken ascarid eggs in soil after exposure to an egg-degrading microfungus

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The microfungus *Pochonia chlamydosporia* has been shown to kill high numbers of chicken ascarid (*Ascaridia galli* and *Heterakis* spp.) eggs *in vitro* but it is not known if surviving eggs may be infective. Unembryonated ascarid eggs (predominantly *A. galli*) were therefore isolated from faeces and added to sterilised (S) or non-sterilised (N) soil in Petri dishes that were either treated with *P. chlamydosporia* (F) or left untreated (C) during incubation at 22°C for 35 days. Egg recovery was estimated before (day 0) and after (day 35) treatment. Thereafter, each of four groups of parasite-free egg-laying hens was exposed to the soil from one of the four treatments in the feed over 12 days. The hens were necropsied day 42 post first exposure. The number of surviving eggs was most substantially reduced in SF soil and SF hens had statistically lower worm burdens (both parasites) compared to SC, NC and NF hens. However, adult *A. galli* were primarily found in SF hens while the other groups mainly harboured immature *A. galli*. Accordingly, SF hens also had the highest ascarid faecal egg counts and lowest serum *A. galli* IgY titre. Overall, *A. galli* recovery increased with increasing exposure, but contrastingly resulted in a reduced risk of egg-producing adult worms, at least short-term. Eggs not destroyed by *P. chlamydosporia* were clearly infective to the hens. The fungus did not appear to be sufficiently effective as a biocontrol agent of ascarid eggs in natural (i.e. non-sterilised) soil unless its effect can be further optimised.

Keywords: *Ascaridia galli*; *Pochonia chlamydosporia*; hens; soil